



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/811,050

03/29/2004

Stephen Meek

ONS00556

9523

7590

08/05/2005

EXAMINER

ZWEIZIG, JEFFERY SHAWN

Mr. Jerry Chroma

Semiconductor Components Industries, L.L.C.

Patent Administration Dept - MD/A700

P.O. Box 62890

Phoenix, AZ 85082-2890

ART UNIT

PAPER NUMBER

2816

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary****Application No.**

10/811,050

**Applicant(s)**

MEEK ET AL.

**Examiner**

Jeffrey S. Zweizig

**Art Unit**

2816

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 16-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Drawings***

1. Reference numbers 25 and 44 are missing from Fig. 2. The "Reference" box is number 25. The node between diode 42 and capacitor 46 is 44. Please include some labels with Fig. 3 such as "Charge Pump Controller" and "Semiconductor Die". The empty boxes are not of much use.

***Abstract***

2. The abstract can be up to 150 words in length. Please elaborate. The current abstract is not much more informative than the title of the invention.

***Election/Restrictions***

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1-15, drawn to a high-side floating charge pump output circuit, classified in class 327, subclass 536.
  - II. Claims 16-19, drawn to a charge pump controller, classified in class 327, subclass 536.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, the charge pump output circuit is usefully by itself as a charge pump output circuit and could be operated by charge pump

Art Unit: 2816

controllers other than the claimed charge pump controller. Likewise, the controller is usefully by itself as a charge pump controller and could operate charge pump output circuits other than the claimed charge pump output circuit. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Robert Hightower on 8/2/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2816

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2, 4, 10 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Referring to claim 2, as best understood the output capacitor is directed toward capacitor 43 and the pump voltage is generated at node 19. Since capacitor 46 is charged to the high side voltage, the output capacitor receives the pump voltage PLUS the high side voltage. The disclosure does not technically support the method recited in claim 2. Claim 2 is not properly enabled. Claim 10 appears to have the same problem.

Referring to claim 4, as best understood the pump capacitor is directed toward capacitor 46. As noted above, the pump capacitor 46 is charged to the high side voltage. This high side voltage is then added in SERIES with the pump voltage output from node 19. The pump voltage does not appear across the terminals of pump capacitor 46 as indicated in the claim. Only the high side voltage appears across the terminals of pump capacitor 46. The disclosure does not technically support the method recited in claim 4. Claim 4 is not properly enabled. Claim 11 appears to have the same problem.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-11, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by White et al. (USPN 6,483,377).

Little weight is given to limitations like "floating" and "referencing". A circuit's "reference" point is often ground, however, this is completely arbitrary and does not affect the function of the circuit. The terms "floating" and "referencing" are seen as points of view more than limitations.

Fig. 1 discloses a floating charge pump circuit comprising an output capacitor 111 referenced to the high side voltage VM as recited in claim 1.

Further shown is a pump capacitor C1 and a charge pump controller (rest of circuit) functioning as recited in claim 3. As best understood, the circuit also performs the intended methods of claim 2 and 4.

Pulses are output from node 117 as recited in claim 5.

The output from node 117 is referenced to VM and, therefore, is seen to be regulated as recited in claim 6.

Little weight is given to the word "protection" as its meaning is arbitrary. When the charge pump exceeds a protection value (such as  $2V_M$ ) charging is stopped by charge pump circuit as recited in claim 7.

Fig. 1 discloses a floating charge pump circuit comprising an input voltage VM and an output capacitor 111 referenced to the input voltage VM as recited in claim 8.

Capacitor is charged to a pump voltage as recited in claim 9.

As best understood, the output capacitor receives the pump voltage recited in claim 10.

As best understood, Fig. 1 discloses a charge pump capacitor C1 as recited in claim 11.

Further disclosed is a charge pump controller (rest of circuit) and a pump voltage output from node 117 as recited in claim 14.

Little weight is given to the word "protection" as its meaning is arbitrary. When the charge pump exceeds a protection value (such as  $2V_M$ ) charging is as recited in claim 15.

8. Claims 1-11, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Appeltans (USPN 6,717,829).

Little weight is given to limitations like "floating" and "referencing". A circuit's "reference" point is often ground, however, this is completely arbitrary and does not

affect the function of the circuit. The terms "floating" and "referencing" are seen as points of view more than limitations.

Fig. 2 discloses a floating charge pump circuit comprising an output capacitor 2 referenced to the high side voltage  $V_{in}$  as recited in claim 1.

Further shown is a pump capacitor 1 and a charge pump controller (rest of circuit) functioning as recited in claim 3. As best understood, the circuit also performs the intended methods of claim 2 and 4.

Pulses are output from switch 4B as recited in claim 5.

The output from switch 4B is referenced to  $V_{ref}$  and, therefore, is seen to be regulated as recited in claim 6.

Little weight is given to the word "protection" as its meaning is arbitrary. When the charge pump exceeds a protection value charging is stopped by component 9 as recited in claim 7.

Fig. 2 discloses a floating charge pump circuit comprising an input voltage  $V_{in}$  and an output capacitor 2 referenced to the input voltage  $V_{in}$  as recited in claim 8.

Capacitor is charged to a pump voltage as recited in claim 9.

As best understood, the output capacitor receives the pump voltage recited in claim 10.

As best understood, Fig. 2 discloses a charge pump capacitor 1 as recited in claim 11.

Further disclosed is a charge pump controller (rest of circuit) and a pump voltage output from switch 4B as recited in claim 14.



Art Unit: 2816

Little weight is given to the word "protection" as its meaning is arbitrary. When the charge pump exceeds a protection value charging is stopped by component 9 as recited in claim 15.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over White et al. in view of Kawai et al. (USPN 6,707,335).

White et al. Fig. 1 disclose a clocked switch 109 as opposed to a first diode as recited in claim 12. White et al. Fig. 1 disclose a clocked switch 103 as opposed to a second diode as recited in claim 13. Those of ordinary skill in the charge pump arts know that the clocked switches and diodes perform the same function within the circuit. While the clocked switches may offer greater control over circuit performance, the diodes offer a simpler circuit layout. Kawai et al. Fig. 1 discloses an example of a similar charge pump circuit including an output capacitor CL and charge pump capacitor 1 along with first and second diodes D1 and D2. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the clocked switches from

the White et al. circuit with diodes as taught by Kawai et al. for the benefit of simplifying the circuit layout and reducing component count. Claims 12 and 13 are obvious.

11. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appeltans in view of Kawai et al. (USPN 6,707,335).

Appeltans Fig. 2 discloses a clocked switch 3A as opposed to a first diode as recited in claim 12. Appeltans Fig. 2 discloses a clocked switch 4B as opposed to a second diode as recited in claim 13. Those of ordinary skill in the charge pump arts know that the clocked switches and diodes perform the same function within the circuit. While the clocked switches may offer greater control over circuit performance, the diodes offer a simpler circuit layout. Kawai et al. Fig. 1 discloses an example of a similar charge pump circuit including an output capacitor CL and charge pump capacitor 1 along with first and second diodes D1 and D2. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the clocked switches from the Appeltans circuit with diodes as taught by Kawai et al. for the benefit of simplifying the circuit layout and reducing component count. Claims 12 and 13 are obvious.

### ***Claim Objections***


12. Claims 16-19 are objected to as having been withdrawn from consideration. Should Applicants choose not to pursue claims 16-19 in this application, claims 16-19 must be explicitly cancelled before the application can be allowed.

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Zweizig whose telephone number is (571) 272-1758. The examiner can normally be reached on Monday thru Wednesday 6:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeffrey S. Zweizig  
Primary Examiner  
Art Unit 2816

JZ